American Museum Novitates

PUBLISHED BY THE AMERICAN MUSEUM OF NATURAL HISTORY
CENTRAL PARK WEST AT 79TH STREET, NEW YORK 24, N.Y.

NUMBER 2169 FEBRUARY 21, 1964

A Captorhinomorph Predator and its Prey (Cotylosauria)

By Theodore H. Eaton, Jr.[1]

In 1895 Cope described and illustrated as *Hypopnous squaliceps* a captorhinomorph reptile "from the Permian bed of Texas," which at the present time is A.M.N.H. No. 4335. It was collected by Charles H. Sternberg in Baylor County, Texas, in 1895. Although Cope's figures show that the specimen was then in the same condition as it is at present, in regard to preparation, he overlooked the fact that it consists of two skulls, which his illustrations also fail to reveal. (See Case, 1911, p. 481.) The object was perhaps water-worn, for its edges are rounded, the anterior end was smoothly worn away, and many of the superficial bones had slipped off from the matrix beneath them. At the posterior end of the larger skull a part of the mandible and matrix had been removed by the preparator to show the articular surfaces of the quadrates.

Cope's generic characters are erroneous, as he supposed that the specimen was a single skull, in which the distinctive features were downward-facing external nares and a ventrally placed mouth. In fact, however, a larger individual had swallowed a smaller, probably of its own species, tail first, so far that its jaws reached to the back of the head. The prey lay inverted, and bones of the left foreleg can be seen in the mouth of the predator, as well as a series of seven vertebrae along the inner side of the right mandible. Therefore the orbits of the prey were supposed by

[1] Professor of Zoology and Curator of Lower Fossil Vertebrates, University of Kansas, Lawrence, Kansas.

Cope to be the nares, placed ventrally, and the mandible of the predator, posterior to these, gave him the impression that the mouth was beneath a prominent rostrum. The specimen gives ample evidence that large prey was acceptable to captorhinomorph reptiles, even if occasionally their appetites exceeded their capacity.

The drawings (fig. 1) are from sketches by the author. The three aspects that are shown correspond to those in Cope (1895, pl. 8, figs. 3, 4, 5, respectively). The slight crushing of the specimen is not enough to invalidate the measurements seriously, but these differ from those given by

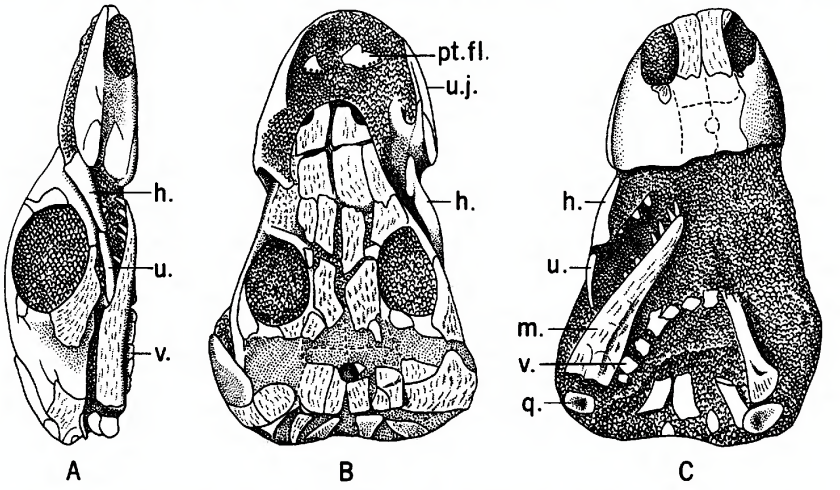

FIG. 1. *Romeria* sp., A.M.N.H. No. 4335, type of *Hypopnous squaliceps* Cope. A. Lateral view. B. Dorsal view of larger skull. C. Ventral view of larger skull. *Abbreviations:* h., humerus of prey; m., mandible of predator; pt. fl., pterygoid flange of prey; q., quadrate of predator; u., ulna of prey; u. j., upper jaw of prey; v., vertebra of prey. Natural size.

Cope because of his error in supposing it to be a single skull. The total length of the larger (predator) skull is 42 mm.; the maximum width, at the squamosal, approximately 33 mm. The smaller skull (of the prey) has a width, at the squamosal, of 23 mm., but its length cannot be measured directly because the antorbital region is missing; when estimated by proportions, it would have been about 30 mm. The distance from the occiput to the orbit in the larger skull is 16 mm.; the longitudinal diameter of its orbit is 14 mm. Corresponding figures in the smaller skull are 11 and 8 mm., respectively.

The four enlarged anterior teeth of the right mandible of the predator nearly meet the tips of the second and third teeth from the *posterior* end

of its maxilla. Therefore the mandible had been displaced backward, probably after death, and at least the posterior third of its length is missing. The smaller skull lacks the mandible but shows the pterygoid flanges, partly exposed in the matrix of its ventral surface, which is upward in relation to the larger skull. The upper jaw of the small skull is too badly worn to show either teeth or alveoli.

The shape and proportions of the larger skull, the relatively thin dermal bones, the weak pitting of their surfaces (compared to that of *Captorhinus*), the apparent absence of more than one row of maxillary teeth, and the distinct separation of the more posterior roof bones from those of the cheek suggest that this animal should be referred to *Romeria*. So far as the smaller skull bears any recognizable features, it appears to be the same. At present, a specific determination is not warranted by the condition of the specimen.

An examination of the type of *Romeria texana* Price (M.C.Z. No. 1480) and other skulls of the Romeriidae in the Museum of Comparative Zoölogy at Harvard College shows a hinge joint, or line of weakness, between cheek and roofing bones, occupying the position morphologically of the primitive otic notch. Whether this joint could move as a result of the action of jaw muscles in life is not certain, but several skulls show a displacement of the cheek bones inward along this line owing to lateral compression after death. Others show a dorsoventral flattening, as in the type of *R. texana* and in the skull of the predator here described (A.M.N.H. No. 4335). This probably means that the shape of a romeriid skull in occipital view was neither so flat nor so deep as the results of pressure in extreme individuals indicate.

For support of the study during which this material was examined, I am grateful to the National Science Foundation, as also for the services of the artist, Mr. Merton C. Bowman. I owe thanks to Dr. E. H. Colbert, Curator of Fossil Reptiles and Amphibians at the American Museum of Natural History, for his courtesies during my visit there, and to Dr. Alfred S. Romer for similar kindness at the Museum of Comparative Zoölogy at Harvard College.

REFERENCES

Case, E. C.
1911. A revision of the Cotylosauria of North America. Publ. Carnegie Inst. Washington, vol. 145, pp. 1–122.

Cope, Edward D.
1895. The reptilian order Cotylosauria. Proc. Amer. Phil. Soc., vol. 34, pp. 436–457.